



KENTUCKY TRANSPORTATION CENTER

A COMPARISON OF STATE POLICIES FOR COMPLYING WITH THE ENDANGERED SPECIES ACT



UNIVERSITY OF KENTUCKY
College of Engineering



OUR MISSION

We provide services to the transportation community
through research, technology transfer and education.

We create and participate in partnerships
to promote safe and effective
transportation systems.

OUR VALUES

Teamwork

Listening and communicating along with
courtesy and respect for others.

Honesty and Ethical Behavior

Delivering the highest quality
products and services.

Continuous Improvement

In all that we do.

**Research Report
KTC-07-29/SPR348-06-1F**

A Comparison of State Policies for Complying with the Endangered Species Act

**by
Lenahan O'Connell, PhD**

and

Ted Grossardt, PhD

**Kentucky Transportation Center
College of Engineering
University of Kentucky
Lexington, Kentucky**

**in Cooperation with
Kentucky Transportation Cabinet
Commonwealth of Kentucky**

The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the views or policies of the University of Kentucky, the Kentucky Transportation Cabinet, or the Federal Highway Administration.

October 2007

1. Report No. KTC-07- 29/SPR348-06-1F	2. Government Accession No.	3. Recipient's Catalog No	
4. Title and Subtitle A Comparison of State Policies for Complying with the Endangered Species Act		5. Report Date October 2007	
		6. Performing Organization Code	
7. Author(s) Lenahan O'Connell and Ted Grossardt		8. Performing Organization Report No. KTC-07-29	
9. Performing Organization Name and Address Kentucky Transportation Center College of Engineering University of Kentucky Lexington, KY 40506		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. SPR 348	
12. Sponsoring Agency Name and Address Kentucky Transportation Cabinet State Office Building Frankfort, KY 40622		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes Prepared in cooperation with the Kentucky Transportation Cabinet			
16. Abstract <p>In recent years the number of biological assessments (BAs) for the presence of endangered species conducted by KYTC has risen significantly. This was primarily due to new/additional restrictions imposed by the United States Fish and Wildlife Service (USFWS) in 2005. The most consequential restriction was the listing of the Indiana bat as potentially present in all Kentucky counties. Previously BAs for the Indiana bat were only conducted when a project occurred in a county in which the Indiana bat had been observed (a known occurrence). This study reviewed the policies of the states adjacent to Kentucky, as well as those of North Carolina, in regard to the conditions that produce a BA for Indiana and Gray bats. The study found that some states tend to follow different policies. But, in addition to Kentucky, four states—Indiana, Missouri, Ohio, and West Virginia— assume that the Indiana bat is potentially present in all counties of the state. These states inspect for suitable habitat for the Indiana bat on all projects. The other states only inspect when a project is in a county where the species has been observed. Regarding the gray bat, the study found that Kentucky is not disadvantaged compared to other states, as the gray bat was not said to be present in a disproportionate number of Kentucky counties. During the course of the study, KYTC developed a Programmatic Agreement with USFWS that has reduced the number of BAs.</p>			
17. Key Words Endangered Species Act, Indiana Bat, Gray Bat, Biological Assessment		18. Distribution Statement	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 42	22. Price

Form DOT F 1700.7 (8-72)

Table of Contents

Executive Summary	3
Chapter 1: Study Purpose.....	6
Chapter 2: Research Plan	8
Initial Research Plan	8
Revised Research Plan	8
Chapter 3: Background Information	10
Federal Policies and Requirements	10
Federal Policies in Kentucky	11
Chapter 4: Canvas of Adjacent States' Policies and Practices	12
Tennessee	13
North Carolina	14
Indiana.....	15
Illinois	16
West Virginia	16
Missouri	17
Ohio.....	18
Virginia	19
Chapter 5. Is KYTC Being Required To Conduct A Disproportionate Number of Biological Assessments Relative To Other State Transportation Agencies?	21
Chapter 6: Combining Different Policies and Programmatic Agreements to Comply with the Endangered Species Act.....	23
Appendix 1: Questions for Officials who Conduct Reviews for Impacts on Threatened and Endangered Species	24
Appendix 2: Government Entities That Keep Databases on Endangered and Threatened Species	26
Appendix 3: Maps Indicating distribution of Indiana and Gray Bats in Adjacent States and North Carolina.....	25

List of Tables

Table 1: Listed Distribution of Indiana and Gray Bats by State (Number of Counties and Percent of Counties).....	12
Table 2: States Following Specific Procedures for Assessing Impacts on Threatened and Endangered Species (Kentucky not included)	13

Executive Summary

To address a project's impact on one or more species, a Biological Assessment (BA) is often required and conducted. A BA typically involves a field survey for the presence of a species. In the case of the Indiana bat, for instance, a BA usually requires the use of nets to catch the bat in the project area.

BAs can be costly and time consuming and, in recent years, the number of BAs conducted by KYTC for endangered species and the volume of the BAs contents were on the rise. This was primarily due to new/additional restrictions imposed by the United States Fish and Wildlife Service (USFWS) in 2005. Specifically, the Indiana bat since then is listed as "potentially" present in all Kentucky counties. This resulted in an unexpected and dramatic increase in the number of BAs necessary for KYTC projects, particularly in calendar year 2006, which also resulted in significant delays for many of those projects. The negative affects were so significant, in fact, that KYTC urgently pursued relief from this unforeseen development. As a result, starting with calendar year 2007, KYTC has a formal Programmatic Biological Opinion (BO) agreement with the USFWS that is the Indiana Bat Conservation Fund (IBCF). This fund will be utilized for impacts to Indiana bat habitat and will streamline how impacts to Indiana bat summer habitat can be addressed. Basically, KYTC can minimize the impact on summer habitat trees suitable for use by the Indiana bat by making contributions to the IBCF. The IBCF agreement is expected to provide a cost savings measure by reducing the number of BAs required for numerous small projects where impacts may be limited to only a few trees of suitable habitat quality.

For projects utilizing the IBCF, the acreage of Indiana bat habitat impacted by the project is calculated then multiplied by an established IBCF money factor. The resulting dollar amount calculated is what KYTC pays in to the IBCF. As expected, use of the IBCF dramatically decreased the number of BAs necessary for 2007. For example, in 2006 KYTC conducted approximately 75 BAs whereas in 2007 the total number of BAs conducted by KYTC will be approximately 20 and this decreased number is what is expected to be necessary for upcoming years.

Although the IBCF brought significant relief to the issue, there are still two ways in which KYTC could be at a disadvantage compared to other states in regard to compliance with section 7 of the Endangered Species Act.

1. KYTC is given a list of endangered and threatened species by county that lists the known species **and** the potential species. Most states surveyed are only required to address species that are **known** for the county in which the project is located.

2. Relative to the other states surveyed, particular species are listed as present or potentially present in a substantially greater percentage of counties or greater percentage of land area in Kentucky as compared to the other states.

This study addressed these two possibilities by reviewing the policies of adjacent or nearby states in regard to the Indiana and Gray bats. The concern for protecting essential habitat as well as species is official USFWS policy. So, the key question is this: Is KYTC being asked to adhere to policies that lead to its conducting more BAs than adjacent states?

This study found that four states inspect for habitat in a project area only if the Indiana bat is known to be present in the county. The four are: Illinois, North Carolina, Tennessee, and Virginia. Illinois may belong in a third category as it appears to have policy of inspecting for habitat in the Chicago-area counties whether or not the Indiana bat has been found in the county of the project. Additionally, in Missouri Indiana bat habitat is presumed to be present statewide; however, a habitat survey is conducted only when the species has been observed in the county the project is located within.

The Indiana bat has been observed in only 8 percent of North Carolina's counties and 12 percent of Virginia's. It has been seen in 23 percent of Tennessee's counties.

The study found that five states assume the Indiana bat has habitat in all areas of the state: Indiana, Missouri, Ohio, West Virginia and Kentucky. These states may be conducting more on-site inspections for habitat and more surveys if habitat is found. Logically, the number of BAs should increase with the number of on-site inspections for habitat. In other words, if the state DOT assumes that potential habitat exists in counties where the species has not been found, it in effect calls for more inspections for possible habitat and ultimately more surveys. With the foregoing in mind, it seems quite possible that KYTC is conducting a greater number of surveys when compared to the states where the Indiana bat is not assumed present in all counties.

The situation in regard to the Gray bat is less clear. Only three states list the Gray bat as present in more than 10 percent of their counties: Kentucky (33% known, 12% potentially present); Missouri (36% known, 34% potentially present); and Tennessee (55% known with no distinction between known and potential). If one adds the potential to the known it appears that Kentucky (a total of 45%) is not disadvantaged compared to Tennessee (55%) and Missouri (70%) with regard to the Gray bat.

The states differ in another way. While most inspect a project site when it is in the same county as an observed (i.e., known) occurrence of the species, three states stipulate that the inspection is mandated only when the project is within a specific distance from an observation of the species. Tennessee inspects for habitat only if the project is within 5 miles of an observation. Virginia inspects for habitat only if the project is within 2 miles

of an observation and Illinois inspects only if the project is within 1 mile of an observation.

In sum, the evidence is clear that the states have adopted somewhat different policies for protecting threatened and endangered species. Logically some policies are more likely to produce more surveys for BAs than others. In other words, there is an element of discretion as well as uncertainty implicit in the selection of policies for complying with the Endangered Species Act (ESA).

One policy seems defensible in virtually all situations—inspect for suitable habitat prior to conducting a survey. If no habitat is present, a survey should not be required. All the interviewed officials endorsed inspection for habitat as a preliminary step in the process of compliance with the ESA.

To reduce uncertainty and expedite projects, five states have reached written agreements with USFWS officials. These Programmatic Agreements differ in various respects. But, they share a common element—Indiana, Kentucky, West Virginia, Missouri, and Ohio have agreements stipulating that they will cut potential roost trees during specified months only.

Ohio and Kentucky now have Programmatic Biological Opinions from the USFWS that provide for economical measures to offset the loss of small amounts of Indiana bat summer habitat.

The situation is ambiguous of course when more than a few trees are present. This could be handled by negotiating an agreement with USFWS similar to Ohio's, which states that "impacts to species are not to be expected and...therefore consultation is not needed...[when] the project will not alter the essential character, function or suitability of the area for the Indiana bat and where any unavoidable cutting of such trees will occur only before April 15 or after September 15."

West Virginia appears to have an agreement in which only a project that impacts more than 17 acres of trees triggers a survey. Perhaps KYTC can negotiate an understanding that surveys should only be conducted when a project impacts a specific number of trees or acreage of a specific size.

There appear to be no reasonable objections to combining the elements of the various Programmatic Agreements to produce an improved one that facilitates compliance and protection of species without imposing undue burdens on KYTC.

Chapter 1: Study Purpose

The presence of habitat for *threatened and endangered species*, both species known to be present in a project area and those potentially present, is a significant consideration in transportation planning. States must invest considerable resources in dealing with these situations, which are especially common in Kentucky, where the rich natural environment contains a large number of species, raising the odds that some of the species impacted by a proposed project will be listed as either known to be present or potentially present in the project area.

In recent years, the Kentucky Transportation Cabinet (KYTC) has been spending substantial resources on the protection of four species or types of species in particular: the Indiana bat, the gray bat, running buffalo clover, and mussels. It has become more expensive to sample for the presence of these species in project areas and more expensive to mitigate, when they are found. It is possible that more resources, efforts and project time than necessary are being devoted toward this. Discretion in this area is clearly possible, as the only species with specific federal guidance for sampling methodology is the Indiana bat.

All states contacted as a part of this survey maintain lists of their federally threatened and endangered species. For the majority of these states, these lists indicate the county or designated area in which the species has been **observed**. Some of the states also list species by the presence of suitable habitat, in which case the species is said to be potentially present.

To address a project's impact on one or more species, a Biological Assessment (BA) is often required and conducted. A BA typically involves a field survey for the presence of a species. In the case of the Indiana bat, for instance, a BA usually requires the use of nets to catch the bat in the project area.

BAs can be costly and time consuming and, in recent years, the number of BAs conducted by KYTC for endangered species and the volume of the BAs contents were on the rise. This was primarily due to new/additional restrictions imposed by the United States Fish and Wildlife Service (USFWS) in 2005. Specifically, the Indiana bat since then is listed as "potentially" present in all Kentucky counties. This resulted in an unexpected and dramatic increase in the number of BAs necessary for KYTC projects, particularly in calendar year 2006, which also resulted in significant delays for many of those projects. The negative affects were so significant, in fact, that KYTC urgently pursued relief from this unforeseen development. As a result, starting with calendar year 2007, KYTC has a formal Programmatic Biological Opinion (BO) agreement with the USFWS that is the Indiana Bat Conservation Fund (IBCF). This fund will be utilized for impacts to Indiana bat habitat and will streamline how impacts to Indiana bat summer

habitat can be addressed. Basically, KYTC can minimize the impact on summer habitat trees suitable for use by the Indiana bat by making contributions to the IBCF. The IBCF agreement is expected to provide a cost savings measure by reducing the number of BAs required for numerous small projects where impacts may be limited to only a few trees of suitable habitat quality.

For projects utilizing the IBCF, the acreage of Indiana bat habitat impacted by the project is calculated then multiplied by an established IBCF money factor. The resulting dollar amount calculated is what KYTC pays in to the IBCF. As expected, use of the IBCF dramatically decreased the number of BAs necessary for 2007. For example, in 2006 KYTC conducted approximately 75 BAs whereas in 2007 the total number of BAs conducted by KYTC will be approximately 20 and this decreased number is what is expected to be necessary for upcoming years.

Although the IBCF brought significant relief to the issue, there are still two ways in which KYTC could be at a disadvantage compared to other states in regard to compliance with section 7 of the Endangered Species Act.

1. KYTC is given a list of endangered and threatened species by county that lists the known species **and** the potential species. Most states surveyed are only required to address species that are **known** for the county in which the project is located.
2. Relative to the other states surveyed, particular species are listed as present or potentially present in a substantially greater percentage of counties or greater percentage of land area in Kentucky as compared to the other states.

At present, and even though the IBCF has become an option, it is still possible that KYTC is devoting more resources than needed for BAs than those spent by adjacent states. And even though the IBCF has brought much relief to the situation, addressing T&E species remains one of the primary causes of project delays for KYTC.

Inasmuch as it seems likely that states often vary in their specific response to the requirement that they not harm the habitats of threatened and endangered species, it is in KYTC's best interest to learn as much as possible about the variety of policies, methods and techniques that other states use to assess project related threats to threatened and endangered species. Doing so could identify other ways for KYTC to speed up the project development process and further decrease project costs and delays.

This study addresses these two questions: (1) Is KYTC being required to address the requirement to protect species on the federal list of threatened and endangered species to a greater degree than most other states; and (2) In addition to the IBCF, are there other potential changes to KYTC's approach to protecting threatened and endangered species that could significantly streamline the process and expedite project development.

Chapter 2: Research Plan

This research entailed interviews, legal research, and examination of official records.

In the course of this research the University of Kentucky-Kentucky Transportation Center (KTC) interviewed environmental officials in each of the adjacent states and North Carolina.

Initial Research Plan

In this research, KTC set out to investigate the methods neighboring states use to address the potential impact of proposed transportation projects on threatened and endangered species.

Among the initial research objectives were the following:

1. Ascertain the number of BA's and associated costs in the adjacent states (Tennessee, West Virginia, Missouri, Indiana, Illinois, Ohio, and Virginia) and North Carolina.
2. Obtain the BA requirements in the adjacent states.
3. Obtain the mitigation requirements in the adjacent states for the most commonly encountered species.
4. Obtain best practices for BAs, including sampling practices.
5. Obtain the time it takes Fish and Wildlife to process BAs in the adjacent states.
6. Confirm that these states have to have a BA approved prior to EA/FONSI.
7. Confirm that "no effect" judgments can be made without USFWS approval.
8. Confirm that their state funds a position for USFWS at the DOT.

Regarding objectives f., g., and h. the following points can be made:

- (1) The Federal Highway Administration (FHWA) in other states does not require that the BA is approved by USFWS before FHWA will approve the EA/FONSI;
- (2) A finding that a project will have "no effect" on a protected species can be made without USFWS approval and other state transportation agencies are taking advantage of this to a greater degree than is KYTC;
- (3) Other states fund positions for USFWS personnel at their DOTs and this has resulted in a significant streamlining of their process.

Revised Research Plan

The early phases of the research, including interviews with officials in Tennessee and North Carolina, revealed that data on the number and costs of BAs were not available. Moreover, the interviews found that the key issue was use of habitat to trigger a BA as

well as the specific procedures that lead up to a BA, rather than the actual methods for conducting the assessment. Indeed the methods do not vary across the states. For instance, mist netting is used to conduct a BA for the Indiana bat throughout the species' range.

Thus, it is differences in the initial project assessment procedures that produce relative increases and decreases in the number and frequency of BAs. So the research plan was revised at a meeting on March 2, 2007 to ascertain differences in the procedures that the states follow when addressing possible impacts of road and bridge projects on threatened and endangered species.

A key concern is the differences in state policies in regard to the grounds for conducting a BA in a project area: the known observance of a species in the county or project area versus the presence of suitable habitat for the species in question. Presumably, states that restrict their county lists to known observations of a species will tend to list protected species as present in fewer counties in their states and in a smaller percentage of their states' counties. They will, therefore, conduct fewer BAs and incur fewer compliance related costs. This will be the case even when they follow the broad federal outline for compliance, which can be summarized as: (1) consult the state list of known or potential presence; (2) if the species is listed in a county or area, inspect for suitable habitat; (3) if such habitat is found, conduct a BA.

The new plan had these steps:

1. Talk with DOT officials in each state of interest to ascertain policies they follow in regard to conducting an inspection of project habitat and deciding to conduct a BA.
2. Review each state's list of threatened and endangered species to ascertain the number and percent of counties that the species of interest are said to be in.
3. Compare KYTC's policies to those of the transportation agencies of adjacent states and North Carolina.

Chapter 3: Background Information

Federal Policies and Requirements

The primary regulations pertaining to the clearance of projects as they relate to threatened or endangered (T&E) species are Section 7 of the Endangered Species act (ESA) of 1973 (as amended), the National Environmental Policy Act (NEPA) of 1969 (as amended), and Section 2 of the Fish and Wildlife Coordination Act (FWCA) of 1958 (as amended) (16 U.S.C. 662).

In a letter sent to the Federal Highway Administration (FHWA) in Richmond Virginia, an official of the U.S. Department of the Interior, Fish and Wildlife Service, laid out the federal requirements.

“If a federal agency determines a project to be a major federal construction activity ...requiring an Environmental Impact Statement (EIS) under NEPA, Section 7c of the ESA, as amended, requires that the agency prepare a Biological Assessment (BA) to determine the effects of the project on listed and proposed species that may occur in the project impact area.”

“In general, the U.S. Fish and Wildlife Service recommends the following steps be taken:

1. Conduct a scientifically sound on-site inspection of the area affected by the action, which must in most cases include a detailed survey of the area to determine if listed or proposed species are present or occur seasonally *and whether suitable habitat exists* within the area for either expanding the existing population or potential reintroduction of populations.
2. Interview recognized experts on the species at issue...
3. Review literature and other scientific data to determine the species' distribution, *habitat needs*, and other biological requirements.
4. Analyze the effects of the action on individuals and populations of each species and *its habitat*, including indirect and cumulative effects of the action.” (*Italics added*)

If the Federal action agency determines that the proposed action may affect any listed species or *critical habitat*, the agency must request, in writing, formal consultation with the service [USFWS] pursuant to Section (a)(2). If the action agency determines that the action is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed *critical habitat*, the agency must confer with the service. (*Italics added*)

Federal Policies in Kentucky

Phillip DeGarmo is a USFWS employee in the Service's Frankfort, Kentucky office. His position is funded by the KYTC. In an interview in October 2006, he articulated the steps needed to comply with the Endangered Species Act. According to him, when a project is proposed, KYTC should follow the following sequence to ensure it does not harm the habitats of threatened and endangered species.

1. See if there are any species on the list of endangered and threatened species known to be either present or potentially present in the county where the project is located. (The Indiana bat is presumed to have habitat in all Kentucky counties.)
2. Conduct an on-site inspection to see if the project could impact any suitable habitat for the species in question.
3. If there is no habitat that will be affected by the project, adequately document the absence of a likely effect on the species. This can be done by following the procedures in the recently implemented KYTC Habit Assessment Manual (HAM).
4. If there is habitat, it is possible to proceed with the project by making changes that will minimize the impact on the habitat. For example, if the original project called for placing piers in a creek, project engineers could redesign the bridge to span the creek without having to place piers in the creek.
5. If this can't be done and it seems likely that habitat must be affected, then it is necessary to conduct a BA to detect the presence of the protected species. If the habitat to be affected is Indiana bat habitat, KYTC can pay in to the IBCF as discussed earlier in this report.

Mr. DeGarmo also made the following observations pertinent to this study. He estimated that the use of the HAM could reduce the number of BAs by about 25 percent. Regarding the current number of BAs, he believes that KYTC may be conducting too many BAs because it does not send its biologists to do on-site inspections as often as possible. After he provided KYTC a list of counties in which protected species were either known to be present or potentially present, KYTC began to do more BAs. Previously, it was only doing BAs when a species was known to be in a county.

Mr. DeGarmo recommended asking this question of the other states: "Is your list of counties with protected species present derived from habitat and species range or from occurrence records". The latter are areas in which the species has been found; the former concern the kinds of habitats where they could be found. By having to address habitat instead of occurrence, KYTC has to address a much more expansive area of concern for the species which results in much greater resources to address.

Chapter 4: Canvas of Adjacent States' Policies and Practices

This chapter presents each state's policies and practices in regard to listing species and deciding to conduct a survey or sample for the presence of a particular species. When the revised plan for this study was agreed to on March 2, 2007, it was decided that the research would ascertain the number of listed counties in each of the states of interest for two species: the Indiana bat and the Gray bat. This would allow a comparison of the various percents of counties in each state in which the species was said to be known to occur. The research would also enquire into the basis for listing: known presence versus potential presence based on suitable habitat for the species. In addition, the study would assemble maps for each state to see if the counties listed were adjacent to each other. Many of the findings are summarized in Tables 1 and 2.

Table 1: Listed Distribution of Indiana and Gray Bats by State (Number of Counties and Percent of Counties)

State	Number of counties in State	County list based on known occurrence only, not potential habitat	Listed distribution of Indiana bat (number and % of counties)	Listed distribution of Gray bat (number and % of counties)
Illinois	102	Yes	26 counties 25%	9 counties 9%
Indiana	92	No	Assumed present in all Counties 100%	8 Counties 9%
Kentucky	120	No	Assumed present in all counties 100%	53 Counties 44% (32% known, 12% potential)
Missouri	115	No	41 Known 36%, but assumed present in 100%	41 Known 36% (35 Counties listed as not likely, others unknown)
North Carolina	100	Yes	8 Counties 8%	4 counties 4%
Ohio	88	No	Assumed present in all counties 100%	Not listed
Tennessee	95	Yes	22 Counties 23%	52 Counties 55%
Virginia	95	Yes	11 Known 12%	3 Known 3%
West Virginia	55	No	10 Counties 18%, but assumed present in 100%	1 county 2%

Table 2: States Following Specific Procedures for Assessing Impacts on Threatened and Endangered Species (Kentucky not included)

- 1. Begin by consulting a database with locations of observed (known) presence of protected species.**

Ohio, West Virginia, Tennessee, North Carolina, Virginia, Missouri, Illinois

- 2. Indiana Bat Presumed to be Potentially Present in All Counties**

Ohio, Missouri, Indiana, West Virginia, Illinois (Chicago Area Counties)

- 3. Only inspect for habitat when species known to be present in county**

Tennessee, North Carolina, Virginia, Missouri (*)

- 4. In addition to Indiana bat, sometimes inspect for habitat when protected species not known to be present**

West Virginia—Mussels only

- 5. Follow this sequence—(1) consult list; (2) if on list in county of project, inspect for habitat, (3) if habitat found, conduct biological survey or assessment.**

Ohio, West Virginia, Tennessee, North Carolina, Virginia, Missouri, Illinois

- 6. States with some type of programmatic or agreement for the Indiana Bat**

Indiana, West Virginia, Ohio, Missouri

(*) Missouri assumes presence statewide for the Indiana bat but otherwise conducts habitat surveys for known species for the county only

Tennessee

Table 1 shows that Tennessee lists the Indiana bat as present (known) in 22 of its 95 counties or 23 percent of its counties. The Gray bat is listed as known to be present in 52 of its counties or 55 percent.

According to Reggie Reeves, who works for the Division of Natural Areas in the Tennessee Department of Environment and Conservation, which maintains the Tennessee List of Rare Species by County, only species that have been observed as present in a county are on the list (Interview with Reggie Reeves on Nov. 1, 2006). In other words, the list is based on **known** occurrences of the species. It does not list by presence of suitable habitat. Thus, for instance, the Indiana bat is not listed for Anderson County; but it is for Bedford County. According to Mr. Reeves, the Tennessee Department of Transportation does not have to discuss a project's potential impact on a species unless the species is listed as known to be present in the County. However, if other information occurs or USFWS asks for a study or survey, then a study or survey must be conducted that addresses issues pertaining to the species in question. The database can be found at www.state.tn.us/environment/na.

A separate interview was conducted with Dr. Deedee Kathman, Supervisor, of the Environmental Technical Studies Office Ecology Section to ascertain the policy for conducting inspections of habitat. Her office assesses a transportation project's potential for an adverse impact on state and federally listed threatened and endangered species. She said that they only inspect for habitat if a species is known to be in the county. In the case of the Indiana bat, they go out to inspect for possible habitat if the bat has been observed within five miles of the proposed project. They do not inspect for habitat on all projects (Interview with Dr. Deedee Kathman on Oct. 31, 2006.) She described their policy for conducting a survey for species presence as follows: (1) consult the species list; (2) if the species in question is on list within five miles of the proposed project, inspect for suitable habitat; (3) if habitat found, conduct a survey.

North Carolina

The findings in Table 1 show that North Carolina lists the Indiana bat as present in 8 of its 100 counties, which is 8 percent of its counties. The Gray bat is listed as known to be present in 4 of its counties or 4 percent.

In an interview, Logan Williams, who is the supervisor of the biological surveys group at NCDOT, said that they use the USFWS list of known species in the county of the project. If the species is not listed as in the county, they typically do not inspect the area for the presence of suitable habitat and do not do a survey.

Regarding the Indiana bat, he said they review the list to see if the bat is known to be in the county of the project. If the species is on the list, they will survey for suitable habitat. If habitat is present, they will do a net survey. North Carolina has 17 biologists who conduct various types of surveys.

In regard to mussels, they rely on the lists and do not conduct surveys for mussels on all projects that impact a stream or waterway. If the mussel is said to be in the county, they do a survey.

Summing up North Carolina's approach to endangered species, it begins by consulting the list of known species. They only inspect for habitat if the species is on the list.

Indiana

The findings in Table 1 show that Indiana lists the Indiana bat as present in all of its 92 counties. The Gray bat is listed as known to be present in 8 of its counties or 9 percent.

In an interview, Mr. Buskirk indicated that the Indiana DOT's approach to protection of threatened and endangered species differed from that of most other states contacted for this study. He said they begin by contacting USFWS and described the project footprint to them. USFWS then tells them, based on records whether or not a particular species is likely to be a problem in the area. He believes that 90 percent of the time, they go on occurrence records.

He said that the federal agency may follow the sequence: (1) consult list of observed occurrences; (2) if on list in county of project, inspect for habitat; (3) if habitat found, conduct biological survey. He said INDOT only inspects for suitable habitat if the USFWS instructs them to do so. His interpretation may be at odds with a statement on the Indiana website that suggests a greater concern for the presence of suitable habitat: "As part of the early coordination process, the USFWS and/or the Indiana Department of Natural Resources will indicate the possible presence of endangered species *or habitat suitable for such species*.... If the early coordination response indicates that a proposed/listed species *or a proposed/designated critical habitat* may be present, a BA will probably be required to identify whether any such species *or habitat* will be adversely affected by the project." (*Italics added*) Source INDOT's website

In regard to the Indiana bat, USFWS assumes it is likely to be anywhere in Indiana. But, according to Mr. Buskirk, they do not call for site inspections; they have called for field surveys with mist netting. However, they have done only 2 bat studies in the last year, excluding the bat studies for I-69. On I-69 they have spent \$2-2.5 million on bat field studies for the 90 mile project.

He said they do not think they are doing more field surveys than necessary. They have a programmatic with USFWS that prevents tree cutting between April 1 and Sept. 15. In other months they can cut trees.

Illinois

The findings in Table 1 show that Illinois lists the Indiana bat as present in 26 of its 102 counties, which is 25 percent of the counties. The Gray bat is listed as known to be present in 9 of its counties or 9 percent.

The Illinois DOT reviews the list of protected species but only inspects for habitat when a species is known to be present in a county (Table 2). On its website it lays out its approach in these words, the Bureau of Design and Environment (BDE) “staff screen projects for species. BDE staff review the project and use a GIS program called the natural resources review tool (NRRT) to determine if a listed species is *known* to be in the project corridor. If a threatened or endangered species is within one mile from a project corridor then...(after notifying the Department of Natural Resources (DNR)), the DNR will inform BDE if surveys for one or more species are needed. If surveys are needed, IDOT will have the Illinois Natural History Survey (INHS)...survey the project area.” (Italics added) (Source IDOT website.)

In an interview, Bureau chief, Michael Hine said that the species list is based on observed occurrences and they only inspect for habitat when they think the species may be present based on a known occurrence in the area. They inspect when the species has been observed within one mile of the project. If suitable habit is found they will conduct a survey. Thus, Illinois generally follows the sequence: (1) consult list; (2) if on list, inspect for habitat; (3) if habitat present, conduct a survey. Regarding the Indiana bat, Illinois does not assume it is in all counties. However, the Chicago district now assumes it is.

West Virginia

The findings in Table 1 show that West Virginia lists the Indiana bat as present in 10 of its 55 counties, which is 18 percent of the counties. The Gray bat is listed as known to be present in only 1 of its counties or 2 percent.

West Virginia begins by consulting a database kept by its Division of Natural Resources. Ben Hark with the West Virginia DOT said that if a species was listed as present in the project county, they conducted a field review to see if suitable habitat was present. If suitable habitat is present, they then hire a consultant to conduct a BA. He emphasized that, for all species **except** the Indiana bat, they only inspect for habitat when a species is **known** to be in the present, and conduct a BA only when a species is listed for the area **and** suitable habitat has been identified. In the case of mussels, they look for suitable habitat whether mussel species are listed as present or not.

For the Indiana bat, *the state assumes the Indiana Bat is potentially present in all counties*. They inspect for habitat trees for the Indiana bat for all projects. If a project impacts more than 17 acres, they conduct a BA for the bat with mist nets or cut roost trees between November and May.

Missouri

The findings in Table 1 show that Missouri lists the Indiana bat as present in 41 of its 115 counties, which is 36 percent of the counties. The Gray bat is listed as known to be in the same number and percent of counties.

Missouri appears to place a strong emphasis on protecting habitat. Regarding the protection of habitat, it states: “Since resource and regulatory agencies’ priorities have *shifted to the protection of a species’ habitat* rather than to the species alone, MoDOT and FHWA need to consider potential impacts to resources such as wetlands, streams, floodplains, prairies, and other ‘native’ Missouri *habitats*.” It further states: “Under the ESA, no action can be taken that will jeopardize the continued existence of federally listed endangered or threatened species or result in the destruction or adverse modification of the *critical habitat* of such species.”

If it is determined that a federally-listed T&E species, critical habitat, or other sensitive biological resource is present or is likely to occur within the project limits, MoDOT consults with the USFWS. Conferences, which are an informal meeting held early during project development, are typically held before it is decided whether or not a BA will be completed.

In an interview, Alan Leary from the Environmental Section in the MoDOT Division of Highway Design said that MoDOT first consults a list of known species occurrences which depicts the county and locations in which the protected species have been observed. The list does not identify suitable habitat or potential locations; however Missouri does maintain a map of sensitive stream habitats. He indicated that their policy is to conduct an inspection of a project area to see if suitable habitat is present only if the species is listed as present in the county of the project. He agreed with the statement that for all species except mussels, they only inspect for suitable habitat when the species has been observed in the county or area of a project. Conversely, they inspect for mussels habitat whether mussels have been observed in the project area or not.

With regard to the Indiana bat, they consider the entire state as potential habitat for the Indiana bat and they occasionally inspect for habitat even when the species has not been observed in the project area. But, they do not inspect for habitat on all projects. He summed up their approach with this statement: If it is a small project and only a few trees are to be taken and it is not an area in which the bat has been found, then MoDOT does

not necessarily inspect for habitat. It takes trees in the winter when the Indiana bat is not in the trees. He also stated that they do not do mist netting every time suitable habitat is found. Regarding most species, he agreed with the sequence of: consult list, if on list inspect for habitat, if habitat present, conduct a BA.

Ohio

All counties in Ohio are assumed to have habitat for the Indiana bat. The Gray bat is not listed in Ohio. Ohio DOT has a document called the Ecological Manual on its website. Regarding the location of the Indiana bat it states: “the distribution of the Indiana bat encompasses the entire state of Ohio.” Other species are listed by known occurrence by county. The USFWS describes distribution by counties. Running buffalo clover, for instance, is in seven counties.

Bill Cody works in the Ecological Section in the ODOT Office of Environmental Services. In an interview he said Ohio begins by consulting a database called the Ohio Heritage Database. As he understands, the list is based on observed presence of the species, not suitable habitat. However, he affirmed that the Indiana bat is assumed to be present in all Ohio counties. He added that Ohio keeps a GIS database of all mist netting activities, so it knows where a bat was captured and conversely where the netting failed to find one.

Regarding the steps taken after consulting the list, he said that if a species is listed as present in the county they then conduct an inspection for suitable habitat. If habitat is found, they conduct a survey. If suitable habitat is not found they do not conduct a survey. Mr. Cody said they did not inspect for the presence of suitable habitat for a particular species if it was not listed as known or observed to be in the county. But, the Indiana bat appears to be an exception, as they assume it is everywhere and have a programmatic agreement with the USFWS for mitigating for the loss of habitat. Specifically, they agreed to seasonal cutting of roost trees in the winter about 15 years ago and have a new programmatic agreement in which they mitigate for lost trees. He predicts that the agreement may save as much as \$10,000,000.

Ohio has a letter of agreement with the USFWS that implies it looks at the impact of a project on species habitat as well as known areas of presence. “The Ohio Department of Transportation and the Federal Highway Administration (FHWA) participate in numerous projects which lie within the range of federally listed endangered or threatened species...For these projects consultation with the U.S. Fish and Wildlife service is required under section 7 of the endangered Species Act to determine if those species or their *habitats* will be impacted.” (*Italics added*). However, they do not say all species or habitats are to be found in all counties, except for the Indiana bat.

The letter of agreement states that impacts to species are not to be expected under three sets of circumstances and therefore consultation is not needed.

1. All projects for which no federally-listed or proposed endangered or threatened species or no suitable habitat for such species were found during a survey of the project area.
2. All projects for which habitat for federally listed or proposed E and T species were found...but for which that habitat will not directly or indirectly be affected by the project.
3. All projects within the range of the Indiana bat which may impact roosting and brood-rearing habitat for that species (i.e., living or standing dead trees or snags with peeling bark, split trunks and/or branches or cavities) but for which the project will not alter the essential character, function or suitability of the area for the Indiana bat and where any unavoidable cutting of such trees will occur only before April 15 or after September 15.

Perhaps, Ohio's policy regarding the Indiana Bat can be summed up as: Assume habitat is present; inspect for suitable habitat; if habitat found, assess the degree of impact. If the impact does not alter the essential character, trees can be cut, but only in winter. If the impact does alter the essential character, then mitigate.

Ohio has a programmatic agreement for mussels that states: "A presence/absence mussel survey will be conducted on specific projects when the Natural Heritage Database indicates mussels to be present in the area."

Virginia

The findings in Table 1 show that Virginia lists the Indiana bat as present in 11 of its 95 counties, which is 12 percent of the counties. The Gray bat is listed as known to be present in 3 of its counties or 3 percent.

An interview was conducted with R.C. Woody, the natural resources program manager. He said that the process for complying with the Endangered Species Act begins by consulting a database maintained by the Department of Conservation and Natural Heritage. The list contains confirmed sightings of the species and does so within a two mile radius of the observation. Most of the time, they do not inspect for suitable habitat when the species is known to be in the area. If a species is listed for the county the project is within, they survey for suitable habitat. If habitat is not found, they do not conduct a BA.

Mr. Woody agreed that the sequence of events, with some exceptions, was consult the list; if on the list, inspect for habitat; and if habitat present, conduct a survey or BA. If a

species is not listed, they do not inspect for suitable habitat. Mr. Woody confirmed that the Indiana bat is not assumed to be in all counties.

Chapter 5: Is KYTC Being Required To Conduct A Disproportionate Number of Biological Assessments Relative To Other State Transportation Agencies?

The USFWS has recently insisted that KYTC must assume that potential habitat for the Indiana bat exists in all areas of the Commonwealth of Kentucky. More broadly, it has adopted a policy that more explicitly requires the assumption that species may be present in counties where they have yet to be observed. This assumption is based on the presumed presence of habitat and species range.

These requirements could result in the imposition of heavier burdens on KYTC than those imposed on other state DOTs. In chapter 1, it was noted that there are two ways in which Kentucky could be at a disadvantage compared to other states in regard to compliance with section 7 of the Endangered Species Act:

1. KYTC is given a list of endangered and threatened species by county that lists the known species **and** the potential species. Most states surveyed are only required to address species that are **known** for the county in which the project is located.
2. Relative to the other states surveyed, particular species are listed as present or potentially present in a substantially greater percentage of counties or greater percentage of land area in Kentucky as compared to the other states.

We begin with the observation that the concern for protecting essential habitat as well as species is official USFWS policy. So, the key question is this: Is KYTC being asked to adhere to policies that lead to its conducting more BAs than adjacent states?

Of the findings on the Indiana bat (Table 1), four states inspect for habitat only if the Indiana bat has been observed to be present. The four are: Illinois, North Carolina, Tennessee, and Virginia. Illinois may belong in a third category as it appears to have policy of inspecting for habitat in the Chicago-area counties whether or not the Indiana bat has been found in the county of the project. Additionally, in Missouri Indiana bat habitat is presumed to be present statewide; however, a habitat survey is conducted only when the species has been observed in the county the project is located within.

The Indiana bat has been observed in only 8 percent of North Carolina's counties and 12 percent of Virginia's. It has been seen in 23 percent of Tennessee's counties.

As Table 1 indicates, five states assume that the Indiana bat has habitat in all areas of the state: Indiana, Missouri, Ohio, West Virginia and Kentucky. These states may be conducting more on-site inspections for habitat and more surveys if habitat is found. The

interviews with state officials showed unequivocally that the states follow a similar approach to conducting BAs. First they consult their lists of known occurrences, then they inspect for possible habitat, and then if habitat is found they conduct a BA. Logically, the number of BAs should increase with the number of on-site inspections for habitat. In other words, if the state DOT assumes that potential habitat exists in counties where the species has not been found, it in effect calls for more inspections and ultimately more surveys. With the foregoing in mind, it seems quite possible that KYTC is conducting a greater number of surveys when compared to the states where the Indiana bat is not assumed present in all counties.

The situation in regard to the Gray bat is less clear. Only three states list the Gray bat as present in more than 10 percent of their counties: Kentucky (33% known, 12% potentially present); Missouri (36% known, 34% potentially present); and Tennessee (55% known with no distinction between known and potential). If one adds the potential to the known it appears that Kentucky (a total of 45%) is not disadvantaged compared to Tennessee (55%) and Missouri (70%) with regard to the Gray bat.

The states differ in another way. While most inspect a project site when it is in the same county as an observed occurrence of the species, three states stipulate that the inspection is mandated only when the project is within a specific distance from an observation of the species. Tennessee inspects for habitat only if the project is within 5 miles of an observation. Virginia inspects for habitat only if the project is within 2 miles of an observation and Illinois inspects only if the project is within 1 mile of an observation.

Chapter 6: Combining Different Policies and Programmatic Agreements to Comply with the Endangered Species Act

The evidence is clear that the states have adopted somewhat different approaches for protecting threatened and endangered species. Logically some policies will produce more surveys for BAs than others. In other words, there is an element of discretion as well as uncertainty implicit in complying with the Endangered Species Act (ESA).

One policy seems defensible in virtually all situations—inspect for suitable habitat prior to conducting a survey. If no habitat is present, a survey should not be required. All the interviewed officials endorsed inspection for habitat as a preliminary step in the process of compliance with the ESA.

To reduce uncertainty and expedite projects, five states have reached written agreements with USFWS officials. These Programmatic Agreements differ in various respects. But, they share a common element—Indiana, Kentucky, West Virginia, Missouri, and Ohio have agreements stipulating that they will cut potential roost trees during specified months only. Indiana appears to have reached an agreement in which it consults and then defers to USFWS, which then orders Indiana to conduct inspections and surveys. This does not appear to have imposed a large burden on Indiana, according to the official interviewed for this study, who said he did not think Indiana was conducting an excessive number of surveys. Ohio and Kentucky now have Programmatic Biological Opinions from the USFWS that provide for economical measures to offset the loss of Indiana bat summer habitat.

The situation is ambiguous of course when more than a few trees are present. This could be handled by negotiating an agreement with USFWS similar to Ohio's, which states that "impacts to species are not to be expected and...therefore consultation is not needed...[when] the project will not alter the essential character, function or suitability of the area for the Indiana bat and where any unavoidable cutting of such trees will occur only before April 15 or after September 15."

West Virginia appears to have an agreement in which only a project that impacts more than 17 acres of trees triggers a survey. Perhaps KYTC can negotiate an understanding that surveys should only be conducted when a project impacts a specific number of trees or acreage of a specific size.

There appear to be no reasonable objections to combining the elements of the various Programmatic Agreements to produce an improved one that facilitates compliance without imposing undue burdens on KYTC. Specifically, in North Carolina and states adjacent to Kentucky, the USFWS does not always require a survey for habitat when only a small impact on the habitat seems likely.

Appendix 1: Questions for Officials who Conduct Reviews for Impacts on Threatened and Endangered Species

We are interested in the circumstances that produce a Biological Assessment (BA) or survey for the presence of a particular species.

There are several conditions that can trigger or lead to a BA. For example, DOTs can order a BA when the species has been observed to live in a particular area or county or they can conduct a BA when it is assumed that suitable habitat is present even though the species has not been observed to be in the project area.

I want to ask some questions about the general approach you take.

1. Do you begin by consulting a database that contains the locations of places, usually counties, where the species has been observed or known to be present?

___YES ___NO

2. Who creates and maintains the database that you consult?

3. How does a species get on the list?

4. Does the list include potential as well as known presence? That is, it is based on the presence of suitable habitat or estimated range, as well as known presence.

___YES ___NO

5. If you find that the species is listed as in the county of the project, do you then conduct an inspection of the project area to see if there is suitable habitat?

___YES ___NO

6. If suitable habitat is found, do you then conduct a BA?

___YES ___NO

7. Is it safe to say that in most circumstances you only inspect for suitable habitat when the species in question has been observed or known to be in the county or area of the project?

___YES ___NO

8. If suitable habitat is not found, do you ever conduct a BA?

___YES ___NO

9. So, to sum up, the sequence of events is (1) consult list, (2) if on list in county of project, inspect for habitat, (3) if habitat found, conduct BA.

___YES ___NO

10. Do you ever inspect for the presence of suitable habitat for a species that is not listed as known or observed to be in the county?

___YES ___NO

We are especially interested in the Indiana bat

1. Do you assume that the Indiana bat is present in all counties or only some?

The following environmental firms and contact persons will be interviewed: Third Rock (Rain Storm); HWB (Richard Dutton); BLA (Tom Cervone); Redwing (Ron Thomas).

Appendix 2: Government Entities That Keep Databases on Endangered and Threatened Species

Illinois—Department of Natural Resources
Indiana—Department of Natural Resources
Missouri—Department of Conservation
North Carolina—USFW
Ohio—Ohio Heritage Database
Tennessee—TDEC
Virginia—Department of Conservation
West Virginia—Department of Natural Resources

Appendix 3: Maps Indicating distribution of Indiana and Gray Bats in Adjacent States and North Carolina

For more information or a complete publication list, contact us at:

KENTUCKY TRANSPORTATION CENTER

176 Raymond Building
University of Kentucky
Lexington, Kentucky 40506-0281

(859) 257-4513
(859) 257-1815 (FAX)
1-800-432-0719
www.ktc.uky.edu
ktc@engr.uky.edu

The University of Kentucky is an Equal Opportunity Organization